UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,841	07/18/2003	Sridhar Srinivasan	3382-66126-01	4754

26119   7590   12/08/2010
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ART UNIT	PAPER NUMBER
2482	

NOTIFICATION DATE	DELIVERY MODE
12/08/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 September 2010*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12,48-60,64-66,69-75 and 78-80* is/are pending in the application.

  4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12,48-60,64-66,69-75 and 78-80* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 July 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

  a)☐ All   b)☐ Some * c)☐ None of:

    1.☐ Certified copies of the priority documents have been received.

    2.☐ Certified copies of the priority documents have been received in Application No. _____.

    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

  * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :20040703, 20051003, 20051101, 20070529, 20080221.

DETAILED ACTION

1.   This application is responsive to application number (10622841) filed on July 18,
2003. Claims 1-12, 48-60, 64-66, 69-75, and 78-80 are pending and have been
examined.

Response to Arguments

2.   Applicant's arguments with respect to claims 1-12, 48-60, 64-66, 69-75, and 78-

80 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

    1.   Determining the scope and contents of the prior art.
    2.   Ascertaining the differences between the prior art and the claims at issue.
    3.   Resolving the level of ordinary skill in the pertinent art.
    4.   Considering objective evidence present in the application indicating
            obviousness or nonobviousness.

5.   Claims 1-3, 5-6, 11-12, 48, 51-53, 55, 69-71, and 74-78 rejected under 35 U.S.C.

103(a) as being unpatentable over Machida (US 7,486,734) in view of Matsumura et al

(US 5,835,144, hereafter Matsumura).

As per **claim 1**, Machida discloses in a computer system, a method of encoding

a video image in a video image sequence, wherein the video image is partitioned into

sets of pixels, the method comprising:

encoding a set of pixels, including:

determining a value for a switch code (Fig 3, element 304 (inter/intra type control

signal)), wherein the value for the switch code indicates whether the set of pixels is

intra-coded or inter-coded (column 8 line 64 - column 9 line 5); and

jointly coding the value for the switch code (Fig 3 element 304 (inter/intra type

control signal)) with motion vector information (Fig 3 element 301 and 313) for the set of

pixels (column 8 line 64 - column 9 line 5).

However, Machida does not explicitly teach jointly coding with a terminal symbol

indicating whether transform coefficients data is encoded for the set of pixels in a bit

stream,

wherein a single variable length code represents the value for the switch code,

the motion vector information, and the terminal symbol, the single variable length code

being selected from a variable length code table of different combinations for the switch

code, the motion vector information, and the terminal symbol.

In the same field of endeavor, Matsumura teaches jointly coding with a terminal

symbol indicating whether transform coefficients data is encoded for the set of pixels in

a bit stream,

wherein a single variable length code represents the value for the switch code,

the motion vector information, and the terminal symbol, the single variable length code

being selected from a variable length code table of different combinations for the switch

code, the motion vector information, and the terminal symbol (column 5 lines 4 – 6;

column 12 lines 61 – 67 and column 13 lines 1-4; Matsumura teaches that a symbol is

used to indicate whether a macroblock is coded in a intra or intercoded format).

Therefore, it would have been obvious for one having skill in the art at time of the

invention to modify the invention of Machida in view of Matsumura. The advantage is

the multiple usage of codewords shortens the average codeword length (column 13

lines 3 – 4).

As per **claim 2**, Machida discloses the method of claim 1 wherein the set of

pixels is a block (column 8 lines 21-47; Machida discloses using pixel blocks).

As per **claim 3**, Machida discloses the method of claim 1 wherein the set of

pixels is a macro block (column 8 lines 21-47; Machida discloses using macroblocks).

Regarding **claim 5**, arguments analogous to those presented for claim 1 are

applicable for claim 5.

As per **claim 6**, Machida discloses the method of claim 5 further comprising

jointly coding additional data for the set of pixels with the extended motion vector code

(column 8 line 64 - column 9 line 5; the prior art discloses that the output bitstream

contains information related to the motion vector information and the type of coding,

which leads to an extended motion vector code).

Regarding **claim 11**, arguments analogous to those presented for claim 2 are applicable for claim 11.

Regarding **claim 12**, arguments analogous to those presented for claim 3 are applicable for claim 12.

As per **claim 48**, Machida discloses a method of reconstructing one or more video images in a video sequence, the method comprising:

decoding (Fig 2) a set of pixels in an encoded bit stream (column 15 Ln 23-32; it relates to the output video signal that is produced), wherein decoding comprises:

receiving an extended motion vector code for the set of pixels (column 15 Ln 1-22; the prior art relates to the decoded motion vector and the other signals that are demultiplexed from the bitstream), wherein the extended motion vector code reflects joint encoding of motion information together with information indicating whether the set of pixels is intra-coded or inter-coded and with a terminal symbol (column 12 lines 60-67 and column 13 lines 22-28; the prior art discloses that the output bitstream contains information related to the motion vector information and the type of coding, which leads to an extended motion vector code as referred to by claim 5);

determining (Fig 2, element 54) whether transform coefficient for the set of pixels is included in the encoded bit stream based at least in part upon the terminal symbol (column 15 lines 1-22; the demultiplexer detects the data within the extended motion vector code).

As per **claim 51**, Machida discloses the method of claim 48 wherein the motion information comprises motion vector information for a differential motion vector for the set of pixels (column 8 lines 30-40).

As per **claim 52**, Machida discloses the method of claim 48 wherein the extended motion vector code is preceded in the bit stream by header information (column 8 Ln 14-18; the prior art clearly discloses in its code that there is a sequence header, which precedes the extended motion vector).

As per **claim 53**, Machida discloses the method of claim 48 wherein the extended motion vector code is followed in the bitstream by a coded block pattern data (Fig 2; column 8 lines 16-20; the prior art discloses using a coded block pattern, which in turn suggest that the data is coded with the motion vector information).

Regarding **claim 55**, arguments analogous to those presented for claim 3 are applicable for claim 55.

Regarding **claim 69**, arguments analogous to those presented for claim 48 are applicable for claim 69.

Regarding **claim 70**, arguments analogous to those presented for claim 5 are applicable for claim 70.

Regarding **claim 71**, arguments analogous to those presented for claims 1 and 48 are applicable for claim 71.

Further, Matsumura teaches if the terminal symbol indicates subsequent transform coefficient data for the macroblock is included in the bit stream, decoding a coded block pattern code for the macroblock, and otherwise skipping the decoding of the coded block pattern code for the macroblock, wherein the terminal symbol indicates whether the coded block pattern code for the macroblock is included in the bitstream (column 5 lines 50 - 60; Matsumura teaches that depending on the terminal symbol the CBP will be processed providing the condition specified by the claim limitation).

Regarding **claim 73**, arguments analogous to those presented for claim 4 are applicable for claim 73.

Regarding **claim 74**, arguments analogous to those presented for claim 51 are applicable for claim 74.

Regarding **claim 75**, arguments analogous to those presented for claim 52 are applicable for claim 75.

Regarding **claim 78**, arguments analogous to those presented for claim 51 are applicable for claim 78.

Regarding **claim 79**, arguments analogous to those presented for claim 71 are applicable for claim 79.

Regarding **claim 80**, arguments analogous to those presented for claim 71 are applicable for claim 80.

6.   Claims 4, 50, and 73 rejected under 35 U.S.C. 103(a) as being unpatentable over

Machida (US 7,486,734) in view of Matsumura (US 5,835,144) in further view of

Shimoda et al (US 5,734,783, hereafter Shimoda).

As per **claim 4**, Machida discloses the method of claim 1 wherein the value for

the switch code indicates the set of pixels is intra-coded (column 7 lines 54-60).

However, Machida does not explicitly teach and wherein the motion vector

information comprises a pseudo motion vector.

In the same field of endeavor, Shimoda teach and wherein the motion vector

information comprises a pseudo motion vector (Col 14 Ln 48-61; the prior art suggests

that the inter/intra coding is decided by the amount of motion and that a motion detector

is used to find a motion signal or motion vector; therefore the intra-frame would have a

motion vector due to it being based on a threshold for both intra frame and inter frame

coding).

Therefore, it would have been obvious for one having skill in the art at the time of

the invention to modify the invention of Machida with the pseudo motion of Shimoda.

The advantage of combining the invention is decreasing the amount of distortion

encoded for an image.

Regarding **claim 50**, arguments analogous to those presented for claim 4 are

applicable for claim 50.

Regarding **claim 73**, arguments analogous to those presented for claim 4 are

applicable for claim 73.

7.   Claim 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Machida

(US 7,486,734) in view of Matsumura et al (US 5,835,144, hereafter Matsumura) in

further view of Sugimoto et al (US 5,650,829, hereafter Sugimoto).

        As per **claim 9**, Machida discloses the method of claim 5.

        However, Machida does not explicitly teach the method of claim 5 further

comprising jointly coding fading information for the video image with the extended

motion vector code

        In the same field of endeavor, Sugimoto et al discloses the method of claim 5

further comprising jointly coding fading information for the video image with the

extended motion vector code (Col 15 Ln6-9; this section of the prior art discloses fade-in

and fade-out information).

        Therefore, it would have been obvious for one having skill in the art at the time of

the invention to modify the invention of Purl with the fading information of Sugimoto.

The advantage of combining the invention is decreasing the amount of distortion

encoded for an image.

8.   Claims 49 and 72 rejected under 35 U.S.C. 103(a) as being unpatentable over

Machida (US 7,486,734) in view of Matsumura et al (US 5,835,144, hereafter

Matsumura) in further view of Tsukagoshi et al (US 2002/0106025, hereafter

Tsukagoshi)

As per **claim 49**, Machida discloses the computer-readable medium of claim 48

wherein the extended motion vector code (Col 12 Ln 60-67).

However, Machida does not explicitly teach the computer-readable medium of

claim 48 wherein the extended motion vector code indicates the set of pixels is skip-

coded.

In the same field of endeavor, Tsukagoshi teach the computer-readable medium

of claim 48 wherein the extended motion vector code indicates the set of pixels is skip-

coded (paragraph [0043] and [0044]).

Therefore, it would have been obvious for one having skill in the art at the time of

the invention to modify the invention of modified invention of Machida with the skip-code

of Tsukagoshi. The advantage would be an increased efficiency of encoding and

decoding.

Regarding **claim 72**, arguments analogous to those presented for claim 49 are

applicable for claim 72.

9.   Claims 65 and 66 rejected under 35 U.S.C. 103(a) as being unpatentable over

Machida (US 7,486,734) in view of Matsumura et al (US 5,835,144, hereafter

Matsumura) in further view of well-known in the art.

As per **claim 65**, Machida discloses the computer-readable medium of claim 55.

However, Machida does not explicitly teach wherein the macroblock includes four

blocks each comprising an 8.times.8 array of luminance pixels, and four blocks each

comprising a 4.times.8 array of chrominance pixels.

In the same field of endeavor, it is well known in the art to apply different coding methods to different formats of the luminance and chrominance signals. Therefore, the examiner takes Official Notice.

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of Purl with the well known of art of applying a coding method with different formats of the luminance and chrominance signal. The advantage is that the coding system applies to a wider range of video formats that are used today.

Regarding **claim 66**, arguments analogous to those presented for claim 65 are applicable for claim 66.

10.   Claims 7-8, 10, 54, 56-60, and 64 rejected under 35 U.S.C. 103(a) as being unpatentable over Machida (US 7,486,734) in view of Matsumura et al (US 5,835,144, hereafter Matsumura) (hereafter, the combination referred to as Machida) in further view of Purl (US 5,227,878).

As per **claim 7**, Machida discloses the method of claim 5.

However, Machida does not explicitly teach wherein the video image is a bi-directionally predicted video image, further comprising jointly coding an index for a reference image for the predicted video image with the extended motion vector code.

In the same field of endeavor, Purl teaches wherein the video image is a bi-directionally predicted video image (Col 6 Ln 12-14; the prior art discloses the use of B-

pictures, which are known to be bi-directionally predicted video images), further

comprising jointly coding an index for a reference image for the predicted video image

with the extended motion vector code (Col 16 Ln 28-51; this section of the prior art

indicates that there are storage units for a previous and next frame. The storage units

can serve as index to the reference image).

Therefore, it would have been obvious for one having skill in the art at the time of

the invention to modify the invention of Machida in view of Purl. The advantage is the

compression efficiency applied to coding a B-picture.

As per **claim 8**, Machida discloses the method of claim 5.

However, Machida does not explicitly teach wherein the video image is a field-

coded video image, further comprising jointly coding an index for a reference field for

the field-coded video image with the extended motion vector code.

In the same field of endeavor, Purl teaches wherein the video image is a field-

coded video image (Col 16 Ln 1-27; this section discloses a part of field-encoding as it

relates to the claim), further comprising jointly coding an index for a reference field for

the field-coded video image with the extended motion vector code (Col 16 Ln 28-51; this

section of the prior art indicates that there are storage units for a previous and next

frame. The storage units can serve as index to the reference image).

Therefore, it would have been obvious for one having skill in the art at the time of

the invention to modify the invention of Machida in view of Purl. The advantage is the

compression efficiency applied to coding in a interlace mode with regards to field.

As per **claim 10**, Machida discloses the method of claim 5.

However, Machida does not explicitly teach further comprising jointly coding an entropy code table index for the video image with the extended motion vector code (Col 22 Ln 6-16; this section of the prior art discloses having VLC tables and VLC is entropy encoding).

In the same field of endeavor, Purl teaches further comprising jointly coding an entropy code table index for the video image with the extended motion vector code (Col 22 Ln 6-16; this section of the prior art discloses having VLC tables and VLC is entropy encoding).

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of Machida in view of Purl. The advantage is extending the standard VLC table to provide more representation for VLC codes allowing faster coding.

As per **claim 54**, Machida discloses the method of claim 48.

However, Machida does not explicitly teach wherein the determining is based on the terminal symbol indicating whether subsequent data is encoded for the set of pixels.

In the same field of endeavor, Purl teaches wherein the determining is based on the terminal symbol (Fig 1, element (block classification signal) indicating whether subsequent data is encoded for the set of pixels (Col 12 Ln 60-67)).

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of Machida in view of Purl. A terminal symbol is already known in the art and commonly used as shown in Purl.

As per **claim 56**, Machida discloses the method of claim 55.

However, Machida does not explicitly teach further comprising decoding a second extended motion vector code for the macroblock.

In the same field of endeavor, Purl teaches further comprising decoding a second extended motion vector code for the macroblock (Col 12 Ln 8-9; the prior art discloses having two motion vectors per macroblock, but this translates into an extended motion vector code because the additional information is combined to motion vector).

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of Machida in view of Purl. The advantage is extending the standard VLC table to provide more representation for VLC codes allowing faster coding.

Regarding **claim 57**, arguments analogous to those presented for claim 7 are applicable for claim 57.

As per **claim 58**, Machida discloses the method of claim 56.

However, Machida does not explicitly teach wherein the macroblock is a field-coded interlace macroblock.

In the same field of endeavor, Purl teaches wherein the macroblock is a field-coded interlace macroblock (Col 4 Ln 9-20; the prior art covers applying the invention to field-coded interlace macroblock)

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of Machida in view of Purl. The advantage is the compression efficiency applied to coding in a interlace mode with regards to field.

As per **claim 59**, Machida discloses the method of claim 55.

However, Machida does not explicitly teach further comprising receiving an extended motion vector code for each block in the macroblock (Col 4 Ln 14-16 and Col 15 Ln 1-22; the prior art relates to the decoded motion vector and the other signals that are demultiplexed from the bitstream and relates to each block).

In the same field of endeavor, Purl teaches further comprising receiving an extended motion vector code for each block in the macroblock (Col 4 Ln 14-16 and Col 15 Ln 1-22; the prior art relates to the decoded motion vector and the other signals that are demultiplexed from the bitstream and relates to each block).

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of Machida in view of Purl. The advantage is extending the standard VLC table to provide more representation for VLC codes allowing faster coding.

Regarding **claim 60**, arguments analogous to those presented for claim 53 are applicable for claim 60.

As per **claim 64**, Machida discloses the method of claim 55.

However, Machida does not explicitly teach wherein the macroblock includes four blocks each comprising an 8x8 array of luminance pixels, and two blocks each comprising an 8x8 array of chrominance pixels (column 4 lines 53-57).

In the same field of endeavor, Purl teaches wherein the macroblock includes four blocks each comprising an 8x8 array of luminance pixels, and two blocks each comprising an 8x8 array of chrominance pixels (column 4 lines 53-57).

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of Machida in view of Purl. Macroblocks are known in the field of coding as containing luminance and chrominance components as provided by the evidence of Purl.

Conclusion

11.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to CHIKAODILI E. ANYIKIRE whose telephone number is

(571)270-1445. The examiner can normally be reached on Monday to Friday, 7:30 am

to 5 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Marsha D. Banks-Harold can be reached on (571) 272 - 7905. The fax

phone number for the organization where this application or proceeding is assigned is

571-273-8300.

Information regarding the status of an application may be obtained from the

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system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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